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REMARKS

Claims 1-12 are pending in the application. Claims 1-12 have been reviewed on the merits and rejected as detailed below. A petition and fee for a two-month extension is included.

Claims 1-3, 5-6, and 9-12 were rejected under 35 USC § 103(a) as obvious over Iwase (US 6,656,618 B2) in view of Barton (US 6,724,194 B1). A 35 USC § 103(a) rejection is proper if the differences between the claimed subject matter and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art. Because Iwase in view of Barton does not satisfy this burden, Applicants traverse the rejection.

The Examiner notes that Iwase neither teaches nor suggests a voltage monitoring circuit that monitors whether any of the individual fuel cell voltages fall below an operating point voltage or are in danger of reversal to a negative potential. The Examiner argues that Barton's Figures 1 and 2 disclose a cell voltage monitor suitable for measuring the voltage of each pair of fuel cells in the fuel cell stack to determine whether any of the voltages are below an operating point voltage which is measured to a reference voltage supply and are in danger of reversal to a negative potential.

Applicants submit that Barton's Figures 1 and 2 do not teach or suggest monitoring individual cells. Figure 1 specifically teaches doubling up cells to monitor which introduces ambiguity in deciding if a cell is in reversal because a strong cell can hide a weak cell. The voltages are measured across two cells in series and there is no way to determine an individual cell's voltage. Figure 2 is simply a representative physical layout of how to implement the measurement system.

Although Barton's Figure 3 proposes measuring the voltage of single cells, Barton's system is not suitable for the claimed invention. Barton proposes a thermal-based system designed for stationary power systems. Because of its design, his thermal-based system suffers from a thermal lag. For example, Barton quotes a ten second

response time in his patent. Conversely, the response time of Applicants' system is on the order of, or faster than, 0.5 seconds. Moreover, Barton's measurements are subject to environmental influences including how heavily the fuel cell is loaded, the heat generated by the fuel cell itself, and the external environment.

Countering these environmental influences requires sufficient insulation to minimize error and drawing a parasitic load from the fuel cell to heat the heater elements. There will be a tradeoff between insulation and load as more heat will be required to overcome external thermal influences. The single-cell measurements will be even more subject to outside thermal influences unless even more parasitic power is drawn from the fuel cell stack to power the heater elements in his design.

Because the presently claimed system relates to a dynamically changing system, Barton's system is simply not suitable. Instead the claimed system utilizes a direct voltage measurement system that allows a significantly reduced lag time and less susceptibility to environmental influences. For example, the response time of the claimed system is on the order of, or faster than, 0.5 seconds. Moreover, the effect of environmental influences is reduced because temperature changes in the electronic components introduce errors that are below or comparable to system noise.

In sum, Barton presents an alternative method to indirectly measure fuel cell voltages that is not suitable for the claimed invention. Barton's method is too slow, too complicated, and too expensive. In other words, the references are mutually incompatible and teach away from their own combination. Moreover, common sense would not direct a person of ordinary skill to combine these references. Thus, the 35 USC § 103(a) standard is not satisfied. Because the 35 USC § 103(a) standard is not satisfied, Applicants kindly request the rejection be withdrawn.

Claim 4 depends from claim 1 and claims 7-9 depend from claim 6. Because Iwase in view of Barton fails to render claims 1 and 6 obvious, they similarly fail to render

claims 4 and 7-9 obvious. Therefore, Applicants kindly request that the rejections be withdrawn.

For convenience, the above remarks generally track the various titled sections of the December 29, 2006 Office Action to which this correspondence is responsive.

Respectfully submitted,

Date: May 16, 2007

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